REMARKS / ARGUMENTS

This application is believed to be in condition for allowance because the claims, as amended, are believed to be non-obvious and patentable over the cited references. The following paragraphs provide the justification for this belief. In view of the following reasoning for allowance, the Applicant hereby respectfully requests further examination and reconsideration of the subject patent application.

1.0 Amendments to the Specification:

In the specification of the application, as originally filed, Applicants referenced a related application, referred to by application title, and the use of a "TBD" placeholder with respect to the filing date and serial number of the related application. In particular, the "TBD" placeholder was used in paragraph [0070] since, at the time of filing, the serial number of the related application was not known.

Specifically, Applicants have amended US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371) to refer to the copending patent application entitled "ANALOG PREAMPLIFIER MEASUREMENT FOR A MICROPHONE ARRAY," having a filing date of Feb. 4, 2004, and assigned Application Serial Number 10/772,528. No new matter is introduced by way of the above described amendments.

2.0 Rejections of Independent Claims 1, 14 and 24 under 35 U.S.C. §102(e):

In the Office Action of July 3, 2007, claims 1, 2, 7, 8, 14-18, 21, 22, 26, 27, 29 and 30 were rejected under 35 U.S.C. §102(e) as being anticipated by *Arndt* (US 6,954,535).

A rejection under 35 USC §102(e) requires that the Applicant's invention was described in patent granted on an application for patent by another filed in the United States before the invention thereof by the Applicant. To establish that a patent describes the Applicant's invention, *all of the claimed elements of an Applicant's invention must be*

9

considered, especially where they are missing from the prior art. If a claimed element is not taught in the referenced patent, then a rejection under 35 USC §102(e) is not proper, as the Applicant's claimed devices, methods and systems can be shown to be patentably distinct from the cited reference.

In view of the following discussion, the Applicants will show that one or more elements of the Applicants claimed devices, methods, and systems, as amended, are missing from the cited art, and that the Applicants claimed devices, methods, and systems are therefore patentable over that cited art.

2.1   Rejection of Claims 1, 2, 7 and 8:

In general, the Office Action rejected independent claim 1 under 35 USC §102(e) based on the rationale that the **Arndt** reference teaches the Applicants' claimed microphone array. However, in view of the following discussion, Applicant will show that the **Arndt** reference does not teach the Applicants claimed microphone array, as amended, and that the claimed microphone array is therefore patentable over the cited art.

Claim 1 has been amended to include a limitation wherein the claimed microphone array passes or transmits all captured audio data to an external computing device for processing of that audio data. This element provides advantages not disclosed or in any way anticipated by the cited **Arndt** reference. For example, paragraph [0048] of the specification ((US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed microphone array as follows:

> "[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio***

__processing__, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing softeare and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

In contrast to the claimed external audio processing described with respect to the claimed microphone array, the *Arndt* reference discloses a "hearing aid" which includes an integral "signal processing unit **6**" (see FIG. 2 and col. 3, lines 50-67 of the *Arndt* reference) that processes sound signals recorded by the microphones (2 and 3) for playback via integral an integral speaker (i.e., "earphone **7**").

Clearly, the hearing aid device disclosed by the *Arndt* reference performs ***internal*** audio processing via integral "signal processing unit **6**". Further, it should also be clear that the hearing aid device disclosed by the *Arndt* reference fails to disclose a technique for transmitting captured audio signals to an external computing device. As such, the claimed microphone array is not disclosed by the *Arndt* reference.

Therefore, in view of the preceding discussion, it is clear that independent claim 1 has elements not disclosed in the *Arndt* reference. Consequently, the rejection of claim 1, as amended, under 35 USC §102(e) is not proper. Therefore, Applicant respectfully requests reconsideration of the rejection of claim 1, and thus of dependent claims 2, 7 and 8, under 35 USC §102(e) in view of the language of claim 1, as amended. In particular, claim 1 recites the following novel language:

> "A microphone array, comprising:
> an array of at least one microphone;
> a memory contained within the array, said memory including

parametric information which defines operational characteristics and configuration of the array;

an array interface for connecting the array to an external computing device;

wherein the parametric information included in the memory is reported to the external computing device via the array interface upon connection of the array to the external computing device; and

wherein ***audio signals captured by the microphone array are transmitted from the microphone array to the external computing devic*e** via the array interface, said ***external computing device performing all audio processing of the captured audio signals in accordance with the parametric information reported to the external computing device***." (emphasis added)

2.2   Rejection of Claims 14-18, 21 and 22:

In general, the Office Action rejected independent claim 14 under 35 USC §102(e) based on the rationale that the ***Arndt*** reference teaches the Applicants' claimed method for "…automatically adapting audio processing software for optimally processing audio signals captured by a microphone array…" However, in view of the following discussion, Applicant will show that the ***Arndt*** reference does not teach the Applicants claimed method, as amended, and that the claimed method is therefore patentable over the cited art.

Claim 14 has been amended to further clarify the intended scope of the first limitation of that claim. In particular, claim 14, as originally drafted included a limitation wherein "***audio processing software operating within an <u>external computing device</u>***…" was automatically configured "to reflect a current configuration of a microphone array…" In view of this limitation, claim 14 has been further limited by a newly added limitation wherein the "***automatically configured audio processing software <u>operating</u>***

12

within the external computing device *is used for processing audio signals* captured by the microphone array and transmitted to the external computing device..."

These elements provide advantages not disclosed or in any way anticipated by the cited ***Arndt*** reference. For example, paragraph [0048] of the specification ((US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed method as follows:

> "[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio processing***, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing softeare and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use microphone arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

In contrast to the claimed use of an ***external computing device*** for ***processing audio signals*** using ***automatically configured audio processing software***, as described with respect to the claimed method, the ***Arndt*** reference discloses a "hearing aid" which includes an ***integral*** "signal processing unit **6**" (see FIG. 2 and col. 3, lines 50-67 of the ***Arndt*** reference) that processes sound signals recorded by the microphones (**2** and **3**) for playback via integral an integral speaker (i.e., "earphone **7**").

Clearly, the hearing aid device disclosed by the **Arndt** reference performs **internal** audio processing via integral "signal processing unit **6**". Further, it should also be clear that the hearing aid device disclosed by the **Arndt** reference fails to disclose a technique for transmitting captured audio signals to an external computing device. As such, the claimed method is not disclosed by the **Arndt** reference.

Therefore, in view of the preceding discussion, it is clear that independent claim 14 has elements not disclosed in the **Arndt** reference. Consequently, the rejection of claim 14, as amended, under 35 USC §102(e) is not proper. Therefore, Applicant respectfully requests reconsideration of the rejection of claim 14, and thus of dependent claims 15-18, 21 and 22, under 35 USC §102(e) in view of the language of claim 14, as amended. In particular, claim 14 recites the following novel language:

"A **method for automatically adapting audio processing software for optimally processing audio signals captured by a microphone array**, comprising using a computing device to:

automatically configure **audio processing software operating within an external computing device** to reflect a current configuration of a microphone array;

said automatically configured audio processing software being used for processing audio signals captured by the microphone array;

said microphone array including at least one microphone, and said microphone array being coupled to the external computing device via any of a wired and a wireless computer interface;

wherein the microphone array automatically determines the current configuration upon being coupled to the external computing device via the computer interface; and

wherein the microphone array automatically reports the current configuration to the external computing device via the computer interface **after the microphone array automatically determines the current configuration**." (emphasis added)

2.3   Rejection of Claims 24, 26, 27, 29 and 30:

In general, the Office Action rejected independent claim 24 under 35 USC §102(e) based on the rationale that the *Arndt* reference teaches the Applicants' claimed system for "...automatically providing device configuration information of a microphone array to an external computing device..." However, in view of the following discussion, Applicant will show that the *Arndt* reference does not teach the Applicants claimed system, as amended, and that the claimed system is therefore patentable over the cited art.

Claim 24 has been amended to include a limitation wherein the claimed microphone array passes or transmits captured audio data to an external computing device for processing of that audio data, with that processing being performed in accordance with the parametric information reported to the external computing device. These elements provide advantages not disclosed or in any way anticipated by the cited *Arndt* reference. For example, paragraph [0048] of the specification ((US Patent Application Publication No. 2005-0175190 A1 (US Application No. 10/775,371)), describes this feature of the claimed system as follows:

> "[0048] Consequently, because the ***self-descriptive microphone array makes use of external computing power, rather than including onboard audio processing hardware and software***, the self-descriptive microphone array is relatively inexpensive to manufacture in comparison to conventional microphone array devices that include onboard audio processing capabilities. Further, because ***external processing power is used for audio processing***, combined applications such as, for example, adaptive beamforming combined with acoustic echo cancellation (AEC) can be easily performed without including expensive audio processing softeare and/or hardware within the array itself. Consequently, one major advantage of moving microphone array audio processing to an external computing device is that it enables conventional conferencing applications... to use microphone

arrays such as the self-descriptive microphone array described herein while significantly reducing microphone array costs."

In contrast to the claimed use of an **external computing device** for **processing audio signals** using **automatically configured audio processing software**, as described with respect to the claimed system, the **Arndt** reference discloses a "hearing aid" which includes an **integral** "signal processing unit **6**" (see FIG. 2 and col. 3, lines 50-67 of the **Arndt** reference) that processes sound signals recorded by the microphones (2 and 3) for playback via integral an integral speaker (i.e., "earphone **7**").

Clearly, the hearing aid device disclosed by the **Arndt** reference performs **internal** audio processing via integral "signal processing unit **6**". Further, it should also be clear that the hearing aid device disclosed by the **Arndt** reference fails to disclose a technique for transmitting captured audio signals to an external computing device. As such, the claimed system is not disclosed by the **Arndt** reference.

Therefore, in view of the preceding discussion, it is clear that independent claim 24 has elements not disclosed in the **Arndt** reference. Consequently, the rejection of claim 24, as amended, under 35 USC §102(e) is not proper. Therefore, Applicant respectfully requests reconsideration of the rejection of claim 24, and thus of dependent claims 26, 27, 29 and 30, under 35 USC §102(e) in view of the language of claim 14, as amended. In particular, claim 24 recites the following novel language:

> "A system for automatically **providing device configuration information of a microphone array to an <u>external</u> computing device**, comprising:
> a microphone array including at least one microphone, each microphone having a predetermined position in a three-dimensional space relative to the microphone array;

said microphone array further including at least one addressable memory, said addressable memory storing parametric information detailing device configuration information of the microphone array;

wherein the microphone array automatically reads the parametric information from the addressable memory and *reports the parametric information to the external computing device* via a computer interface, said external computing device being remotely coupled to the microphone array via the computer interface; and

wherein *audio signals captured by the microphone array are transmitted from the microphone array to the external computing device* via the computer interface, said *external computing device performing all audio processing of the captured audio signals in accordance with the parametric information* reported to the external computing device." (emphasis added)

3.0   Rejections under 35 U.S.C. §103(a):

The Office Action rejected dependent claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 under 35 U.S.C. §103(a) based on the rationale that the *Arndt* reference discloses the Applicants claimed devices, systems and methods when combined with various additional references. However, as discussed above in Sections 2.1 through 2.3, the parent claims (i.e., claims 1, 14 and 24) of dependent claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 have been shown to be allowable in view of the cited *Arndt* reference. Therefore, the use of additional references in an attempt to address particular features of various dependent claims fails to show a prima facie case of obviousness as required under 35 U.S.C. §103(a). Therefore, the Applicants respectfully request reconsideration of the rejection of claims 3-5, 9, 10-12, 13, 19, 20, 23, and 25 in view of the patentability of their respective parent claims, as discussed above.

CONCLUSION

In view of the above, it is respectfully submitted that claims 1-30, as amended, are in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of claims 1-30 and to pass this application to issue. Additionally, in an effort to further the prosecution of the subject application, the Applicant kindly invites the Examiner to telephone the Applicant's attorney at (805) 278-8855 if the Examiner has any questions or concerns.

Respectfully submitted,

Mark Watson

Lyon & Harr
300 Esplanade Drive, Suite 800
Oxnard, California 93036
(805) 278-8855

Mark A. Watson
Registration No. 41,370
Attorney for Applicant